MICROWAVE RADIO PATH CA	LCULATIO	N SPREADSHEE	<del>.</del>	30-Jul-92
ROJECT NAME		?		
NGINEER		?		
REQUENCY (GHz)		6.70		
I. SITE NAME		?		
3. LATITUDE, North,	Degrees	?		7
	Minutes	?		
	Seconds	?		-
1. LONGITUDE, West,	Degrees	?		
	Minutes	?		
	Seconds			
5. SITE ELEVATION, AMSL	Feet	?		
S. AZIMUTH FROM NORTH	Degrees	0.0		0.0
7. PATH LENGTH	Miles		30.0	
B. PATH ATTENUATION	d₿		142.7	
0. TOWER TYPE		?		
1. ANTENNA HEIGHT.AGL	Feet	100		100
2. TRANSMISSION LINE LENGTH	Feet	110		110
3. TRANS. LINE TYPE	10/4001	EW63		EW6
4. TRANS. LINE LOSS	dB/100'	1.40		1.4
5. TRANSMISSION LINE LOSS 6. MISCELLANEOUS LOSSES	dB dB	1.5 0.5		1.: 0.:
7. PROTECTED TERMINAL LOSS	dB	7		<u> </u>
8. DIVERSITY RECEPTION LOSS	dB	<del>-</del>		
9. TOTAL FIXED LOSSES	dB	2.0		2.
20. TOTAL LOSSES(PATH AND FIXED)	dB		146.7	
1. ANTENNA DIAMETER	Feet	8.0	, , , , , ,	8.
22. ANTENNA TYPE		SOUD		SOLI
3. ANTENNA GAIN	dBi	42.3		42.
24. TOTAL ANTENNA GAINS	dB		84.6	
25. NET SYSTEM LOSS	₫₿		62.2	
26. RADIO EQUIPMENT TYPE AND CAPACITY			ANALOG 600	
27. MINIMUM TRANSMITTER POWER	dBm		32.0	
28. RECEIVER THRESHOLD	dBm		-80.0	
29. NET SYSTEM GAIN	dB		112.0	
30. MEDIAN RECEIVED POWER	₫₿m		-30.2	
30. FLAT FADE MARGIN	dB		49.8	
31. DISPERSIVE F.M. (DIG. ONLY) 32. COMPOSITE FADE MARGIN	dB dB		?   49.8	
WEIGHTED RAYLEIGH PROPAGATION RE		OR ATMOSPHE	<u> </u>	-1
TERRAIN/CLIMATE FACTOR	10.25 TO 6			0.2
MEAN ANNUAL TEMPERATURE	Deg F			50.
DIVERSITY SPACING	Feet			30.
NON-BIVERSITY OUTAGE TIME	Sec/yr			9.
NON-DIVERSITY AVAILABILITY	Percent			99.9999
SPACE DIVERSITY IMPROV. FACTOR	Decimal			1350.
SPACE DIVERSITY OUTAGE TIME	Sec/yr			0.
SPACE DIVERSITY AVAILABILITY	Percent			100.0000
	,		E .	1

NOTE: FOR CALCULATION METHOD OF RELIABILITY REFER TO A. VIGANTS, SPACE DIVERSITY ENGINEERING, BSTJ, VOL. 54, NO. 1, JAN 1975

NATIONAL TELECOMMUNICATION: US DEPARTMENT of MICROWAVE RADIO PATH CA	COMMERC	CE		30-Jul-92
MICHOTALIADICIANI	200271101	TO THE ABOUTE		00-001-32
PROJECT NAME		?		
ENGINEER		?		
FREQUENCY (GH2)		1.90		
4.0075.11115				
1. SITE NAME	D	?		?
3. LATITUDE, North,	Degrees	?		
	Minutes	<u>-</u> ?		?
4. LONGITUDE. West.	Seconds			?
4. LONGITUDE. West,	Degrees Minutes	<del></del>		?
	Seconds			?
5. SITE ELEVATION, AMSL	Feet			7
6. AZIMUTH FROM NORTH	Degrees	0.0		0.0
7. PATH LENGTH	Miles	0.0	50.0	V.0
8. PATH ATTENUATION	dB		136.2	
10. TOWER TYPE	40	?	100.2	?
11. ANTENNA HEIGHT,AGL	Feet	100		100
12. TRANSMISSION LINE LENGTH	Feet	110	<del> </del>	110
13. TRANS. LINE TYPE	1 961	1 5/8" FOAM		1 5/8" FOAM
14. TRANS. LINE LOSS	d8/100'	1.25		1.25
15. TRANSMISSION LINE LOSS	dB/100	1.4		1.4
16. MISCELLANEOUS LOSSES	dB	0.5		0.5
17. PROTECTED TERMINAL LOSS	dB	?	<del> </del>	?
18. DIVERSITY RECEPTION LOSS	d₿	7		7
19. TOTAL FIXED LOSSES	₫₿	1.9		1.9
20. TOTAL LOSSES(PATH AND FIXED)	dB	1.3	139.9	1.3
21 ANTENNA DIAMETER	Feet	10.0	109.9	10.0
22. ANTENNA TYPE	1 961	GRID		GRID
23. ANTENNA GAIN	dBi	33.3	<del> </del>	33.3
24. TOTAL ANTENNA GAINS	dB		66.6	00.0
25. NET SYSTEM LOSS	dB		73.4	<del> </del>
26 HADIO EQUIPMENT TYPE AND CAPACITY			ANALOG 600	<del> </del>
27. MINIMUM TRANSMITTER POWER	dBm		32.0	-
28. RECEIVER THRESHOLD	dBm		-80.0	
29. NET SYSTEM GAIN	dB		112.0	
30. MEDIAN RECEIVED POWER	dBm		-41.4	
30. FLAT FADE MARGIN	₫B		38.6	<del>                                     </del>
31. DISPERSIVE F.M. (DIG. ONLY)	dB		7	
32. COMPOSITE FADE MARGIN	dB		38.6	
WEIGHTED RAYLEIGH PROPAGATION RE	LIABILITY F	OR ATMOSPHE	RIC MULTIPAT	Н
TERRAIN/CLIMATE FACTOR	0.25 TO 6			0.25
MEAN ANNUAL TEMPERATURE	Deg F			50.0
DIVERSITY SPACING	Feet			60.0
	<del></del>		<del> </del>	100
NON-DIVERSITY OUTAGE TIME	Sec/yr			163.0
NON-DIVERSITY AVAILABILITY	Percent	<del> </del>	<del> </del>	99.99948
SPACE DIVERSITY IMPROV. FACTOR	Decimal			70.1
SPACE DIVERSITY DUTAGE TIME	Sec/yr	<del>                                     </del>	<del> </del>	2.3
SPACE DIVERSITY AVAILABILITY	Percent	<del> </del>	<del> </del>	99.99999
CONTRACTOR OF THE PROPERTY OF	, , crossit			55.5533
BELL SHORT HAUL GOJECTIVE	Sec/yr			320.0

NOTE: FOR CALCULATION METHOD OF RELIABILITY REFER TO A. VIGANTS, SPACE DIVERSITY ENGINEERING, BSTJ, VOL. 54, NO. 1, JAN 1975

NATIONAL TELECOMMUNICATION US DEPARTMENT of MICROWAVE RADIO PATH CA	COMMERC	DE		30-Jui-92
····			•••	00-001-02
PROJECT NAME		?		
ENGINEER		?		
FREQUENCY (GHz)	<del></del>	6.70		
1. SITE NAME		?		?
3. LATITUDE, North,	Degrees	?		?
	Minutes	?		?
	Seconds	?		?
4. LONGITUDE, West,	Degrees	?		?
	Minutes	?		?
	Seconds	?		?
5. SITE ELEVATION, AMSL	Feet	?		?
6. AZIMUTH FROM NORTH	Degrees	0.0	50.0	0.0
7. PATH LENGTH	Miles		50.0 147.1	
8. PATH ATTENUATION 10. TOWER TYPE	d₿	7	147.1	7
11. ANTENNA HEIGHT, AGL	Feet	100		100
12. TRANSMISSION LINE LENGTH	Feet	110		110
13. TRANS, LINE TYPE	, , , ,	EW63		EW63
14. TRANS, LINE LOSS	dB/100'	1.40		1.40
15. TRANSMISSION LINE LOSS	dB	1.5		1.5
16. MISCELLANEOUS LOSSES	₫₿	0.5		0.5
17. PROTECTED TERMINAL LOSS	dB	?		?
18. DIVERSITY RECEPTION LOSS	₫B	?		?
19. TOTAL FIXED LOSSES	dB	2.0		2.0
20. TOTAL LOSSES(PATH AND FIXED)	d₿		151.2	
21. ANTENNA DIAMETER	Feet	10.0		10.0
22. ANTENNA TYPE		SOLID		SOLID
23. ANTENNA GAIN 24. TOTAL ANTENNA GAINS	dBi dB	44.2	88.4	44.2
25. NET SYSTEM LOSS	dB		62.7	
26. RADIO EQUIPMENT TYPE AND CAPACITY	40		ANALOG 600	
27. MINIMUM TRANSMITTER POWER	dBm		32.0	
28. RECEIVER THRESHOLD	dBm		-80.0	
29. NET SYSTEM GAIN	d₿		112.0	
30. MEDIAN RECEIVED POWER	dBm		-30.7	
30. FLAT FADE MARGIN	dB		49.3	
31. DISPERSIVE F.M. (DIG. ONLY)	dB		?	
32. COMPOSITE FADE MARGIN	dB		49.3	
WEIGHTED RAYLEIGH PROPAGATION RE	LIABILITY F	OR ATMOSPHE	RIC MULTIPAT	Н .
TERMAIN/CLIMATE FACTOR	0.25 TO 6			0.25
MEAN ANNUAL TEMPERATURE	Deg F			50.0
DIVERSITY SPACING	Feet			30.0
NON-DIVERSITY OUTAGE TIME	Sache			49.9
NON-DIVERSITY AVAILABILITY	Sec/yr Percent			99.99984
NON-DIVERSITY AVAILABILITY	. r ercent			33.33334
SPACE DIVERSITY IMPROV. FACTOR	Decimal			712.3
SPACE DIVERSITY OUTAGE TIME	Sec/yr			0.1
SPACE DIVERSITY AVAILABILITY	Percent		1	100.00000
BELL SHORT HAUL OBJECTIVE	Sec/yr	1		320.0

NOTE: FOR CALCULATION METHOD OF RELIABILITY REFER TO A. VIGANTS, SPACE DIVERSITY ENGINEERING, BSTJ, VOL. 54, NO. 1, JAN 1975

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TITLE AND SUBTITLE  FEACURE ATT OF DELOCATING NON COVERNMENT FLVED SYSTEMS			August 199	
FEASIBILITY OF RELOCATING NON-GOVERNMENT FIXED SYSTEMS INTO THE 1710-1850 MHz BAND		6. Performing Orga		
			NTIA/OSM/	
. AUTHOR(S) Gonald F Hunt B	hilip E. Gawthrop		9. Project/Task/Wo	rk Unit No.
PERFORMING ORGANIZATI			29012171	`
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Annapolis, MD 21				
Sponsoring Organization N			12. Type of Report	and Period Covered
U.S. Department of			TECHNICAL	
179 Admiral Cochr				
Annapolis, MD 21	.401		13.	
5. ABSTRACT (A 200-word or survey, mention it here.)	less factual summary of most significan	nt information. If document in	cludes a significant bib	bliography or literature
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to de	,	ctrum in the 2 GH frum has been su to other bands to that examines the 710-1850 MHz band of for non-government t 1710-1850 MHz of delines, based on pa	z range for ne aggested as a make room fo feasibility of re d. It summarize ent fixed servi- could accommonth length, are d	ew, emerging in option for these new elocating non-es current use ce use in the odate a limited leveloped that
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to de	States is identifying speederal Government spect CC licensees relocated to report documents a study service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guidetermine which 2 GHz private-sectors.	ctrum in the 2 GH frum has been su to other bands to that examines the 710-1850 MHz band of for non-government t 1710-1850 MHz of delines, based on pa	z range for ne aggested as a make room fo feasibility of re d. It summarize ent fixed servi- could accommonth length, are d	ew, emerging in option for these new elocating non-es current use ce use in the odate a limited leveloped that
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to defor accommodation.	States is identifying speederal Government spect CC licensees relocated to report documents a study service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guidetermine which 2 GHz private in the 1710-1850 MHz	ctrum in the 2 GH frum has been su to other bands to that examines the 710-1850 MHz band of for non-government t 1710-1850 MHz of delines, based on pa	z range for ne aggested as a make room fo feasibility of re d. It summarize ent fixed servi- could accommonth length, are d	ew, emerging in option for these new elocating non-es current use ce use in the odate a limited leveloped that
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to de for accommodatio	States is identifying speederal Government spect CC licensees relocated to report documents a study service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guidetermine which 2 GHz private in the 1710-1850 MHz	ctrum in the 2 GH frum has been su to other bands to that examines the 710-1850 MHz band of for non-government t 1710-1850 MHz of delines, based on pa te-sector fixed syst band.	z range for ne aggested as a make room for feasibility of re d. It summarize ent fixed servi- could accommon th length, are do ems are potent	ew, emerging in option for these new elocating non-es current use ce use in the odate a limited leveloped that tial candidates
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to defor accommodation.  Emerging Technologies. Fe accommodation.	States is identifying speederal Government spect of the spect of the service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guide termine which 2 GHz private in the 1710-1850 MHz in the 1710-1850 MHz is separated by semicolons.	ctrum in the 2 GH frum has been su to other bands to that examines the 710-1850 MHz band of for non-government t 1710-1850 MHz of delines, based on parte-sector fixed syst band.	z range for neiggested as a make room for feasibility of red. It summarizes ent fixed serviculd accommonth length, are disems are potent	ew, emerging in option for or these new elocating non-es current use ce use in the odate a limited leveloped that tial candidates
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to defor accommodation.  Emerging Technologies. Fe accommodation.	States is identifying speederal Government spect of the spect of the service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guide termine which 2 GHz private in the 1710-1850 MHz in the 1710-1850 MHz is separated by semicolons.	ctrum in the 2 GH frum has been su to other bands to that examines the 710-1850 MHz band of for non-government t 1710-1850 MHz of delines, based on particles, based on particles band.	z range for neiggested as a make room for feasibility of red. It summarizes ent fixed serviculd accommonth length, are disems are potent	ew, emerging in option for or these new elocating non-es current use ce use in the odate a limited leveloped that tial candidates
The United technologies. Fe accommodating F technologies. This government fixed of 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to defor accommodation.  Emerging Technologies. Fee accommodation.	States is identifying speederal Government spect of the CC licensees relocated to report documents a study service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guide termine which 2 GHz private in the 1710-1850 MHz in the 1710-1850 MHz in the 1710-1850 MHz is separated by semicolons.	ctrum in the 2 GH rum has been sure of other bands to that examines the 710-1850 MHz band of for non-government 1710-1850 MHz of delines, based on parte-sector fixed systematics.  18. Security Class. (This UNCLASSIFIED	z range for neiggested as a make room for feasibility of red. It summarizes ent fixed service ould accommonth length, are disease are potent as are potent z Band; Fixed	ew, emerging in option for these new elocating non-es current use ce use in the odate a limited leveloped that trial candidates  1 Service
The United technologies. Fe accommodating F technologies. This government fixed sof 1710-1850 MH 1850-2200 MHz ranumber of 2 GHz p could be used to defor accommodation  16. Key Words (Alphabetical of Emerging Technologies)  17. AVAILABILITY STATEMEN  UNLIMITE	States is identifying speederal Government spect of the CC licensees relocated to report documents a study service systems into the 17 dz and the bands allocate ange. The study found that rivate-sector stations. Guide termine which 2 GHz private in the 1710-1850 MHz in the 1710-1850 MHz in the 1710-1850 MHz is separated by semicolons.	ctrum in the 2 GH rum has been sure of other bands to that examines the 710-1850 MHz band for non-government 1710-1850 MHz of delines, based on parte-sector fixed systematics.  18. Security Class. (This	z range for neiggested as a make room for feasibility of red. It summarizes ent fixed service ould accommonth length, are disease are potent as are potent z Band; Fixed	ew, emerging in option for or these new elocating non-es current use ce use in the odate a limited leveloped that tial candidates